

DOCKET NO. 309 - Cellco Partnership d/b/a Verizon Wireless	}	Connecticut
application for a Certificate of Environmental Compatibility and	}	
Public Need for the construction, maintenance, and operation of a	}	Siting
wireless telecommunications facility located at the Round Hill	}	
Community Church, 395 Round Hill Road, Greenwich,	}	Council
Connecticut.		February 6, 2007

Findings of Fact

Introduction

1. Cellco Partnership d/b/a Verizon Wireless (Cellco), in accordance with provisions of General Statutes §§ 16-50g through 16-50aa, applied to the Connecticut Siting Council (Council) on November 9, 2005 for the construction, operation, and maintenance of a wireless telecommunications facility at 395 Round Hill Road, Greenwich, Connecticut. (Cellco 1, p. 1)
2. The purpose of the proposed Round Hill Road facility is to provide wireless service to coverage gaps on the Merritt Parkway and local roads in the residentially developed Round Hill section of Greenwich. (Cellco 1, p. 1)
3. Pursuant to General Statutes § 16-50m, the Council, after giving due notice thereof, held a public hearing on January 31, 2006, beginning at 3:00 p.m. and continuing at 7:00 p.m. at the Greenwich Town Hall, 101 Field Point Road, Greenwich, Connecticut. The public hearing was continued on March 28, 2006 and June 14, 2006 at the office of the Connecticut Siting Council, 10 Franklin Square, New Britain, Connecticut. (Council's Hearing Notice dated June 15, 2005; Transcript 1- 1/31/06, 3:00 p.m. [Tr. 1] p. 3; Transcript 2- 1/31/06, 7:00 p.m. [Tr. 2], p. 3; Transcript 3- 3/28/06 [Tr. 3], p. 3; Transcript 4- 6/14/06, [Tr. 4] p. 3)
4. The party in this proceeding is the applicant. The intervenors in this proceeding are Omnipoint Communications, Inc. (T-Mobile), New Cingular Wireless PCS LLC (New Cingular), Sprint Nextel Corporation (Sprint Nextel), Mr. Cliff Berger and Ms. Elizabeth Galt. (Tr. 1, pp. 5-6; Tr. 3, pp. 3-10)
5. The Council closed the hearing on June 14, 2006. (Tr. 4, p. 218)
6. On July 25, 2006, ClearLinx Network Corporation (ClearLinx) filed a Petition with the Council (Petition No. 782) to install a Distributed Antenna System (DAS) that would provide infrastructure for wireless service specific to the Merritt Parkway, including the portion of the highway in the Round Hill Road area of Greenwich. (Council Administrative Notice Item No. 13, p. 1; Attachment C)
7. On August 31, 2006, the Council denied Cellco's application without prejudice in order to best determine how the installation of the ClearLinx DAS on the Merritt Parkway, if such a system were installed, might interrelate with or otherwise duplicate the represented benefit of the proposed Round Hill Road facility, if at all. (Administrative Notice of Council Records)
8. On September 16, 2006, the Council, pursuant to Connecticut General Statutes Section 4-181a (a), voted to reconsider the denial without prejudice and reopen the record. The Council sought to conduct a combined proceeding, inclusive of Docket 309 and Petition 782, pursuant to Connecticut General Statute § 16-50m(d). (Administrative Notice of Council Records)

9. On October 27, 2006, ClearLinx withdrew Petition 782 from Council consideration to address comments from the State Historic Preservation Officer (SHPO) regarding visual impacts to historic overpasses on the Merritt Parkway. (Council Administrative Notice Item No. 15; Transcript 5-11/09/06 [Tr. 5], pp. 31-32)
10. The Council, after giving due notice thereof, conducted a public hearing on the reopened Docket 309 proceeding on November 9, 2006, beginning at 11:30 a.m. at the Greenwich Town Hall, 101 Field Point Road, Greenwich, Connecticut. (Tr. 5, p. 4)
11. Notice of the application was provided to all abutting property owners by certified mail. Public notice of the application was published in The Greenwich Time on November 3 and 4, 2005. (Cellco 1, p. 5; Cellco 2)
12. Public notice of the reopened proceeding was published in The Greenwich Time on October 11, 2006 and November 3, 2006. (Record)
13. Pursuant to CGS § 16-50l (b), Cellco provided notice to all federal, state, regional, and local officials and agencies listed therein. (Cellco 1, p. 5, Attachment 2)

State Agency Comment

14. Pursuant to CGS § 16-50j (h), on December 23, 2005, June 15, 2006, and October 6, 2006, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility; Department of Environmental Protection (DEP), Department of Public Health (DPH), Council on Environmental Quality (CEQ), Department of Public Utility Control (DPUC), Office of Policy and Management (OPM), Department of Economic and Community Development (DECD), and the Department of Transportation (DOT). (Record)
15. The Council received responses from the DOT's Bureau of Engineering and Highway Operations on January 25, 2006 stating that the DOT has no comment on the proposed project. (Record)
16. The following agencies did not respond with comment on the application: CEQ, DPUC, OPM, DPH, and the DECD. (Record)

Municipal Consultation

17. From September 2004 to March 2005, Cellco representatives met with the Town of Greenwich First Selectman Jim Lash and Town Planner Diane Fox to discuss the proposed Round Hill facility and other potential telecommunications sites in Greenwich. (Cellco 8, p. 8)
18. On September 8, 2005, Cellco initiated a formal consultation process with the Town of Greenwich by sending a technical report describing the proposed facility to Mr. Lash. Cellco representatives appeared before the Greenwich Planning and Zoning Commission (Commission) on September 27 and October 18, 2005 to discuss the proposal. (Cellco 1, p. 19)
19. The Commission submitted written comments and recommendations regarding the proposed project to Cellco and the Council on November 1, 2005. (Cellco 3; Record)

20. The Commission recommended that the Council require Cellco to explore alternative sites and strategies due to the sensitive nature of the Round Hill area, the impact on adjacent landowners, and the impact on existing vegetation at the site. The Commission further recommended a maximum tower height of 90 feet if other alternatives were not feasible. (Cellco 3; Record)

Public Need for Service

21. In 1996, the United States Congress recognized a nationwide need for high quality wireless telecommunications services, including cellular telephone service. Through the Federal Telecommunications Act of 1996, Congress seeks to promote competition, encourage technical innovations, and foster lower prices for telecommunications services. (Council Administrative Notice Item No. 7)
22. In issuing cellular licenses, the Federal government has preempted the determination of public need for cellular service by the states, and has established design standards to ensure technical integrity and nationwide compatibility among all systems. Cellco is licensed by the Federal Communications Commission (FCC) to provide cellular and personal wireless communication service to Fairfield County, Connecticut. (Council Administrative Notice Item No. 7; Cellco 1, p. 7; Tr. 1, p. 14)
23. The Telecommunications Act of 1996 prohibits local and state entities from discriminating among providers of functionally equivalent services. (Council Administrative Notice Item No. 7)
24. The Telecommunications Act of 1996, a Federal law passed by the United States Congress, prohibits any state or local entity from regulating telecommunications towers on the basis of the environmental effects of radio frequency emissions to the extent that such towers and equipment comply with FCC's regulations concerning such emissions. This Act also blocks the Council from prohibiting or acting with the effect of prohibiting the provision of personal wireless service. (Council Administrative Notice Item No. 7)

Site Selection

25. Existing facilities within two miles of the proposed site are as follows:
- a) 363 Riversville Road, 150-foot monopole, 2.0 miles south of the site;
 - b) DeKraft Road, 130-foot water tank, 1.1 miles southeast;
 - c) King Street, 100-foot lattice tower, 1.0 mile west;
 - d) 45 Butternut Hollow Road, 180-foot lattice tower, 1.1 miles east of the site; and
 - e) 606 Riversville Road, church steeple, 1.0 miles west of the site.
- These sites do not provide coverage to the target service area. (Cellco 1, Attachment 6; Sprint Nextel 3, Q. 5; T-Mobile 1, Q. 5)
26. Cellco established a search area for the Round Hill section of Greenwich in 1994. Cellco initially investigated the possible use of two church steeples, one at the Round Hill Community Church and one at the Round Hill First Church. Neither church was interested in Cellco's proposal. (Cellco 1, Attachment 8)
27. Cellco examined the potential use of a gas station/general store on Round Hill Road and a CL&P distribution substation adjacent to the Merritt Parkway. Cellco could not reach an agreement with the gas station/general store in regards to placement of a facility on the parcel that would not hinder operation of the station. CL&P rejected Cellco's proposal due to property size constraints. (Cellco 1, Attachment 8; Cellco 18)

28. In 2003, Cellco joined with several other carriers to support a proposal by T-Mobile to construct a 150-foot monopole at the Round Hill Fire Department property on Round Hill Road. In 2004, T-Mobile abandoned this proposal due to neighborhood opposition. (Cellco 1, Attachment 8; T-Mobile 1, Q. 11)
29. Except for the gas station/general store parcel, land in the Round Hill area is zoned residential. (Cellco 1, Attachment 8)

Site Description

30. The proposed site is located on an 8.1-acre parcel owned by the Round Hill Community Church at 395 Round Hill Road in Greenwich. (Cellco 1, Attachment 1)
31. The site parcel is zoned residential, RA-4. The west side of the parcel is developed with the church community building, rectory, caretakers' residence and associated driveways and parking areas. The eastern portion of the property is undeveloped. (Cellco 1, p. 2)
32. The proposed telecommunications site is located in the eastern portion of the property at an elevation of 380 feet above mean sea level. The site development area is wooded with an average tree height of 60 feet. (Cellco 1, p. 2; Tr. 4, p. 40)
33. Cellco proposes to construct two 115-foot monopoles at the site, referred to as the easterly and westerly towers. The monopoles would be designed to accommodate three levels of internally mounted panel antennas with a ten-foot vertical separation. (Cellco 1, p. 2, Attachment 1)
34. The monopoles would be approximately four feet wide at the bottom tapering to 2.5 feet at the top. (Cellco 1, Attachment 1)
35. On the westerly tower, Cellco would install three PCS antennas (1900 MHz) at a centerline height of 110 feet and three cellular antennas (800 MHz) at a centerline height of 100 feet. New Cingular would install three dual band antennas (800 MHz and 1900 MHz) at a centerline height of 90 feet. (Cellco 1, Attachment 1; New Cingular 1, Q. 4, Q. 9)
36. On the easterly tower, T-Mobile would install three PCS antennas at a centerline height of 110 feet; Sprint Nextel would install three iDEN antennas (800 MHz and 900 MHz) at a centerline height of 100 feet and three PCS antennas at a centerline height of 90 feet. (Cellco 1, Attachment 1; T-Mobile 1, Q. 9; Sprint Nextel 1, Q. 3, Q. 4)
37. Cellco proposes to construct a 1,904 square-foot U shaped equipment building at the base of the towers within a 100-foot-by-100-foot lease area. Six air conditioning units and the utility board would be located within the compound. (Cellco 1, Attachment 1)
38. The equipment building would be a wood frame structure with a cedar shingled pitched roof. The building would be 14 feet wide and 35 feet long on the west side, 75 feet long on the south side and 54 feet long on the east side. The equipment building would be sectionalized to accommodate the radio equipment of four carriers. (Cellco 1, Attachment 1)
39. A wood fence would connect the two ends of the building to form an enclosed compound. A single row of white pine trees would be planted around the perimeter of the compound fence. (Cellco 1, Attachment 1)

40. Access to the site would be provided by a 12-foot wide, 380-foot long driveway of new construction extending from an existing paved parking lot on the property. Underground utilities would be installed from an existing utility pole on Round Hill Road. (Cellco 1, Attachment 1)
41. Development of the site would require minimal grading and clearing. The site and access road are situated to minimize the clearing of significant trees and the disruption of a stone wall that forms the eastern boundary of the lease area. (Cellco 1, Attachment 1)
42. The nearest abutting property from the site is approximately 130 feet to the east and is owned by Jean Van Waveran. (Cellco 1, Attachment 1)
43. Land within a quarter-mile of the site is zoned residential. There are 13 residences within 1,000 feet of the proposed site. (Cellco 1, p. 14; Cellco 4, Q. 19)
44. The nearest residence from the proposed site is approximately 400 feet to the northwest, owned by Robert Weiss. (Cellco 1, Attachment 3; Cellco 4, Q. 19; Cellco 15)

45. The estimated facility construction cost is:

Cell site radio equipment (Cellco only)	525,000.
Tower, cable, and antennas	300,000.
Utilities	20,000.
Equipment building	150,000.
<u>Site preparation, facility installation</u>	<u>150,000.</u>
Total estimated cost	\$1,145,000.

(Cellco 1, p. 20)

Environmental Considerations

46. There are no known extant populations of Federal Threatened or Endangered Species at the proposed site. There are no known extant populations of state Endangered, Threatened or Special Concern Species at the proposed site. (Cellco 1, Attachment 10)
47. The proposed facility would have no effect on cultural or historic resources. The nearest historic district, the Round Hill Historic District is located approximately a half-mile north of the site. The district consists of five contiguous parcels. The Sylvanus Selleck Gristmill, listed in the National Register of Historic Places, is approximately 0.25 miles south of the site at 124 Old Mill Road. (Cellco 1, Attachment 10; Cellco 11, Q. 20; Galt 5)
48. Development of the site would require the removal of 42 trees with a diameter of six inches at breast height. (Tr. 3, p. 50)
49. Development of the site would not directly affect any wetlands or watercourses. The nearest wetland is approximately 140 feet east of the site. Construction activities would not occur within the Town-designated 100-foot upland review area established to protect wetland resources. The site is not located within a flood zone. (Cellco 1, p. 18; Cellco 1b, p. 10)
50. Aircraft hazard obstruction marking or lighting would not be required. (Cellco 1, Attachment 11)

51. The maximum power density from the radio frequency emissions of the proposed Cellco, New Cingular, T-Mobile, and Sprint Nextel antennas are calculated to be 57.8% of the standard for Maximum Permissible Exposure, as adopted by the FCC, at the base of the proposed towers. This calculation was based on methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) that assumes all antennas would be pointed at the base of the towers and all channels would be operating simultaneously. (Cellco 1, Attachment 1)

Visibility

52. The towers would have a galvanized steel finish. A brown color treatment would not be beneficial since the brown color could stand out against multiple color variations of the wooded surroundings during winter months. (Cellco 1, p. 2; Tr. 3, p. 45)
53. Visibility of the proposed facility from specific locations within a two-mile radius of the proposed site is presented in the table below:

Location	Visible	Approx. Portion of Tower Visible	Approx. Distance from Tower
Round Hill Road at south entrance to Round Hill Community Church	Yes	20 feet-above trees & 20 feet-through trees	0.16 miles west
Round Hill Road at north entrance to Round Hill Community Church	Yes	50 feet-through trees	0.17 miles west
7 Old Round Hill Lane, second floor (Berger residence)	Yes	15 feet-above trees	0.45 miles west
Round Hill Road and Cherry Valley Road	Yes	25 feet-through trees	0.35 miles north
Old Round Hill Lane adjacent to #1	Yes	10 feet-through trees	0.5 miles west
Old Mill Road adjacent to #115	Yes	40 feet-through trees	0.2 miles south
Merritt Parkway north of Round Hill Road interchange	No		0.6 miles south
Merritt Parkway at Round Hill Road	No		0.85 miles south
Audubon Center, John Street	No		1.3 miles west
Riversville Road at Porchuck Road	No		1.3 miles west
Riversville Road adjacent to #555	No		1.3 miles west
Cherry Valley Road adjacent to #92	No		0.3 miles north
Cherry Valley Road adjacent to #88	No		0.35 miles north
Round Hill Road adjacent to #465	No		0.8 miles north
Round Hill Road adjacent to #435	No		0.45 miles north
Round Hill Road and Old Mill Road	No		0.3 miles south
Moreland Road adjacent to # 20	No		0.3 miles west
Moreland Road adjacent to # 35	No		0.5 miles west
Moreland Road adjacent to #55	No		0.6 miles east
Moreland Road adjacent to # 28	No		0.45 miles west

(Cellco 1, Attachment 9; Cellco 17; Berger 3)

54. The average height of the tree canopy within a two-mile radius of the site is 60 feet agl. Tree heights on the property range from 55 feet to 90 feet agl. (Cellco 1, Attachment 9; Berger 3; Tr. 4, p. 24)
55. Mr. Berger contends the facility would be visible above the tree canopy from approximately 18 acres within a two-mile radius of the site (refer to Figure 1). (Berger 3)

56. Mr. Berger contends the facility would be seasonably visible from approximately 245 acres within a two-mile radius of the site, a majority of which is within a half-mile of the site (refer to Figure 1).
57. Mr. Berger contends 193 parcels within a two-mile radius of the site would have seasonal views of the facility. (Berger 3)
58. Cellco contends the facility would be visible year-round from approximately 12 acres within a two-mile radius of the site. (Cellco 11, Q. 18)
59. Cellco contends the facility would be seasonally visible from approximately 104 acres within two miles of the site, with 96 acres of the total occurring within a 0.5-mile radius of the site (refer to Figure 2). (Cellco 11, Q. 19)
60. Cellco contends 24 parcels within a 0.5-mile radius of the site would have seasonal views of the facility. (Cellco 11, Q. 19)
61. The facility would be visible year-round from approximately 17 residences within two miles of the site. Views from most of these residences would be limited to the upper portions of the facility. (Cellco 11, Q. 18)
62. The facility would be seasonally visible from 19 residences within a 0.5-mile radius of the site. (Cellco 11, Q. 19)
63. The facility would have the greatest visual impact on three abutting residences located approximately 400 feet to the northwest; 500 feet to the southeast; and 590 feet to the east. The residence to the northwest (Weiss residence) would have year round views of the upper 40% to 70% of the structure. The other two residences would have seasonal views of portions of the facility and possibility year-round views of the top of the facility. These residences could have limited views of the compound. No abutting residence would have seasonal views of the entire facility. (Cellco 11, Q. 18; Cellco 15; Tr. 3, pp. 42-43; Tr. 4, p. 19, 30)
64. The top of the facility would be visible above the tree canopy from the remaining abutting properties to the south and east. (Tr. 3, pp. 42-44)
65. The facility would not be visible from the Round Hill Historic District or the Sylvanus Selleck Gristmill. (Cellco 21; Berger 3)
66. The facility would not be visible from the Babcock Preserve, an open space preserve approximately 0.9 miles east of the site, or the Fairchild Wildflower Garden, approximately 0.8 miles west of the site. The facility would be seasonally visible from two small isolated areas of the Greenwich Audubon Center property, approximately 0.9 miles west of the site. (Cellco 1, Attachment 9; Berger 3)
67. The facility would not be visible from two Town-designated scenic roads, Buckfield Lane and Burying Hill Road, north of the site. (Cellco 1, Attachment 9; Berger 3)
68. Mr. Berger contends the facility would be seasonably visible through trees from approximately 0.25-miles of the Merritt Parkway approximately 0.5 miles south of the site. (Berger 3)
69. Cellco contends the facility would not be visible from the Merritt Parkway. (Cellco 1, Attachment 9; Cellco 17)

70. Views of the facility from Round Hill Road at the entrance of the church would be partially screened by the Community House on the site parcel. (Cellco 4, Q. 11)

Cellco - Existing and Proposed Wireless Coverage

71. Cellco operates at both the 800 MHz (cellular) and 1900 MHz (PCS) frequencies. Cellco is designing the site with a signal level threshold of -85 dBm, sufficient for in-vehicle coverage with a reliability factor of 99%. Cellco's in-building signal level threshold is -75 dBm. (Cellco 9, pp. 2, 5; Tr. 1, pp. 76, 80, 82)
72. Cellco proposes to install three PCS antennas at 110 feet and three cellular antennas at 100 feet on the easterly tower. (Cellco 1, Attachment 1)
73. Cellco currently experiences an approximate 1.1-mile coverage gap on the Merritt Parkway at the cellular frequencies and a 1.4-mile coverage gap at the PCS frequencies (refer to Figure 3). Cellco's current signal level on the Merritt Parkway ranges between -86 dBm to -95 dBm. (Cellco 4, Q. 2; Tr. 4, pp. 10-11)
74. The minimum height required by Cellco to meet PCS coverage design objectives is 110 feet agl (refer to Figure 4). (Cellco 10, Attachment 2, plot 4)
75. At 110 feet, the facility would provide approximately 4.3 square miles of PCS coverage to the Round Hill area, including portions of Round Hill Road, Lake Avenue, Old Mill Road, Cherry Valley Road, and Will-Merry Lane, all residentially developed areas. (Cellco 4, Q. 9; Cellco 21; Tr. 4, p. 31)
76. Installing PCS antennas at 100 feet would result in a 0.2-mile gap (-86 to -90 dBm) on the Merritt Parkway east of Round Hill Road (refer to Figure 5). (Cellco 10, Attachment 2, plot 3)
77. The minimum height required by Cellco to meet cellular coverage design objectives is 80 feet agl. (Cellco 10, Attachment 5, plot 7; Tr. 1, p. 96; Tr. 4, pp. 11-12)

T-Mobile - Existing and Proposed Wireless Coverage

78. T-Mobile operates in the PCS frequencies. T-Mobile is designing the site with a signal level threshold of -84 dBm, sufficient for in-vehicle coverage. T-Mobile's in-building signal level threshold is -76 dBm. (T-Mobile 1, Q. 3)
79. T-Mobile is proposing to install three PCS antennas on the easterly tower at a height of 110 feet agl. (T-Mobile 1, Q. 9)
80. T-Mobile's primary coverage objective is the Merritt Parkway and the surrounding Round Hill area. (Tr. 4, p. 52)
81. Using a signal level of -84 dBm, T-Mobile currently has an approximate one-mile coverage gap on the Merritt Parkway and has minimal coverage in the surrounding Round Hill area (refer to Figure 6). Existing signal levels in the area are ≥ -90 dBm. (T-Mobile 1, Q. 1, Q. 5)

82. Existing adjacent T-Mobile sites that would interact with the proposed site are presented in the table below. None of these existing sites provides adequate coverage to the target service area.

Location	Antenna Height agl	Approximate Distance from Site
363 Riversville Road, Greenwich	163 feet - monopole	2.0 miles south
Butternut Hollow Road, Greenwich	125 feet - lattice	1.1 miles east
DeKraft Road, Greenwich	122 feet - watertank	1.6 miles southeast

(T-Mobile 1, Q. 5)

83. The minimum height required by T-Mobile to meet coverage design objectives is 110 feet (refer to Figure 7). (T-Mobile 4, plot 3)
84. Installing antennas at 100 feet would result in an approximate 0.25-mile coverage gap on the Merritt Parkway east of Round Hill Road. The signal in this area would range from -84 dBm to -90 dBm (refer to Figure 8). A call entering the gap area would experience call clarity problems but the call would most likely be maintained. (Tr. 4, pp. 46-47)

New Cingular - Existing and Proposed Wireless Coverage

85. New Cingular operates in both the cellular and PCS frequency bands. New Cingular would install three 800/1900 MHz dual band antennas at a centerline height of 90 feet on the westerly tower. (New Cingular 1, Q. 2, Q. 7, Q. 9)
86. New Cingular's primary coverage objective is the Merritt Parkway and the surrounding Round Hill area. (New Cingular 1, Q. 1; Tr. 3, p. 85)
87. New Cingular's existing signal level on the Merritt Parkway is -80 to -90 dBm at 800 MHz and -76 to -90 dBm at 1900 MHz (refer to Figure 9). Areas west of the site are less than -96 dBm at both the cellular and PCS frequencies. New Cingular seeks to provide coverage throughout the area at a signal level of -75 dBm, sufficient for in-building coverage with a 98% reliability factor. New Cingular's in-vehicle signal level threshold is -80 dBm. (New Cingular 1, Q. 1, Q. 3; New Cingular 3)
88. Existing adjacent New Cingular sites that would interact with the proposed site are presented in the table below. None of these existing sites provides adequate coverage to the target service area.

Location	Antenna Height agl	Approximate Distance from Site
Butternut Hollow Road, Greenwich	148 feet - lattice	1.1 miles east
363 Riversville Road, Greenwich	156 feet - monopole	2.0 miles south

(New Cingular 1, Q. 5)

89. Coverage objectives would be met at an antenna height of 90 feet agl (refer to Figure 10). (New Cingular 4)
90. Although coverage models depict adequate coverage to the area from the site at 70 feet agl, the tree canopy immediately northwest of the site would reach a height of 80 feet, potentially causing signal interference to cell receptors in this direction. New Cingular attempts to locate antennas at least ten feet above the tree canopy to provide a clear signal and account for future tree growth. (New Cingular 4, plots 1, 8, 10; Tr. 3, pp. 74, 94-98)

91. Installing antennas at 80 feet would provide adequate coverage to the Merritt Parkway and acceptable coverage to the residential areas northwest of the site. (Tr. 3, p. 85)

Sprint Nextel - Existing and Proposed Wireless Coverage

92. Sprint Nextel operates in the 800 MHz and 900 MHz frequencies (Sprint iDEN) and 1900 MHz frequencies (Sprint PCS). iDEN is defined as Integrated Digital Enhanced Network (Sprint 1, Q. 3; Sprint 3, Q. 3)
93. Sprint Nextel proposes to locate three iDEN antennas at 100 feet and three PCS antennas at 90 feet on the easterly tower. (Sprint Nextel 1, Q. 3, Q. 4)
94. Sprint Nextel is designing the site for in-vehicle coverage, -82 dBm for Sprint iDEN and -94 dBm for Sprint PCS. (Sprint 1, Q. 1; Sprint 3, Q. 1)
95. Sprint Nextel's primary coverage objective is the Merritt Parkway. (Tr. 4, p. 137)
96. The Sprint iDEN and Sprint PCS networks both experience an approximate 1.2-mile coverage gap on the Merritt Parkway and minimal coverage in the surrounding Round Hill area (refer to Figures 11 & 13). (Sprint Nextel 3, Q. 5; Sprint Nextel 2, Q. 15)
97. Existing adjacent Sprint Nextel sites that would interact with the proposed site are presented in the table below. None of these existing sites provides adequate coverage to the target service area.

Location	Antenna Height agl	Approximate Distance from Site
363 Riversville Road, Greenwich	130 feet – monopole (PCS & iDEN)	2.0 miles south
Butternut Hollow Road, Greenwich	115 feet – lattice (PCS {existing} & iDEN {proposed})	1.1 miles east
606 Riversville Road, Greenwich	68 feet – church steeple (PCS only)	1.0 miles southeast

(Sprint Nextel 1; Sprint Nextel 3, Q. 5)

98. The minimum height required by Sprint Nextel to meet PCS coverage design objectives is 90 feet agl. (refer to Figure 13). (Sprint Nextel 3, Q. 6, Q. 7)
99. Installing PCS antennas at 80 feet would cause a degradation of the quality of coverage on the Merritt Parkway. (Tr. 4, pp. 124-127)
100. Sprint iDEN coverage from the proposed antenna height of 100 feet would provide adequate coverage to the Merritt Parkway and the residential areas around Round Hill Road, Old Mill Road, Lake Avenue and Will Merry Lane. Even with the proposed coverage, gaps would remain on the north sections of Round Hill Road and Lake Avenue and the western portion of Old Mill Road. Antennas mounted at a higher level would not completely cover the remaining gaps. (Sprint Nextel 1, Q. 1, Q. 6, Q. 7; Sprint Nextel 4, Q. 12; Tr. 4, p. 139)
101. Installing Sprint iDEN antennas at 70 feet would meet coverage objectives on the Merritt Parkway, Round Hill Road, and Will Merry Lane. Some degradation of coverage would occur on the periphery of the coverage footprint on Lake Avenue and Old Mill Road. (Sprint Nextel 4, Q. 12; Tr. 4, p. 139)

Alternative Technologies

ClearLinx Distributed Antenna System

102. ClearLinx, through petition 782, since withdrawn, sought to construct and operate a DAS system on the Merritt Parkway in the towns of Westport, Norwalk, New Canaan, Stamford, and Greenwich, including the parkway in the Round Hill Road area of Greenwich. (Council Administrative Notice Item No. 13, p. 1, Attachment C; Cellco 4, Q. 2)
103. The ClearLinx DAS is designed to provide wireless service exclusively to the Merritt Parkway. (Tr. 5, p. 82)
104. The ClearLinx DAS could accommodate multiple service providers utilizing the same DAS infrastructure. The DAS could support all current wireless service technologies, including carriers utilizing different technologies and/or frequencies. (Council Administrative Notice Item No. 13, p. 6; Tr. 5, pp. 37-38)
105. ClearLinx's DAS infrastructure consists of a base station and nodes. The base station houses the wireless service provider equipment. Wireless radio frequency signals are routed via fiber optic cable from the base station to the nodes. The nodes consist of a repeater and a small antenna that transmits wireless radio frequency signals to the coverage area. (Council Administrative Notice Item No. 13, p. 3)
106. Each node could provide approximately 800-1,000 feet of coverage along the Merritt Parkway at a signal level threshold of -84 dBm. (Council Administrative Notice Item No. 13, p. 4; Tr. 5, p. 55)
107. ClearLinx proposed to install three nodes on the Merritt Parkway in the Round Hill Road area of Greenwich. The nodes would provide approximately 1.5 miles of coverage to the highway in this area. (Council Administrative Notice Item No. 13, Attachment C)
108. The nodes in the Round Hill Road area would be suspended over the highway using braided steel cables attached to existing utility poles. (Council Administrative Notice Item No. 13, Attachment E)
109. Coverage from each node would extend approximately 500 to 1,000 feet into areas surrounding the highway, depending on the location of the node. The quality of this incidental coverage would vary, since areas outside of the highway are not ClearLinx's infrastructure objectives. (Tr. 5, pp. 58, 118)
110. The ClearLinx DAS would not provide a comparable amount of coverage to that provided by the proposed Round Hill Road facility. (Tr. 5, p. 83)
111. ClearLinx is not proposing to install a DAS in the residential sections of the Round Hill Road area. (Tr. 5, pp. 89, 118)
112. Cellco, Cingular, T-Mobile, and Sprint-Nextel do not have any executed contracts, letters of intent, letters of interest, or any other legal document with ClearLinx to use the Merritt Parkway DAS. (Tr. 5, pp. 134, 136, 173, 184, 189, 201)
113. Prior to submission of the application, Cellco considered using a design of a short structure at the proposed site combined with a limited DAS system, but rejected this alternative due to the number of nodes required to achieve coverage equal to that of the proposed facility. Approximately 30 nodes would be required. (Cellco 9, p. 8; Tr. 3, pp. 35-36)

114. Cellco would not locate on the ClearLinx DAS if it were constructed. Cellco seeks to provide coverage to the Merritt Parkway as well as residential areas north and south of the parkway. The Round Hill Road site provides adequate coverage to the Merritt Parkway as well as residential areas north and south of the highway. (Cellco 23, pp. 3-4; Cellco 24, Q. 2)
112. If a DAS served the Merritt Parkway in the Round Hill area, Cellco would need a facility at the Round Hill location to provide service to areas north and south of the highway. Technically, other locations could provide such coverage, but finding suitable property to develop an alternative facility in this area is problematic. Cellco has searched for a suitable facility location in this area for approximately 10 years. (Cellco 1, Attachment 8; Cellco 23, pp. 3-4; Tr. 5, pp. 29, 165-166)
113. T-Mobile would not locate on the ClearLinx DAS if it were constructed. T-Mobile seeks to provide coverage to both the Merritt Parkway and surrounding residential areas. (T-Mobile 3, Q. 18; T-Mobile 6, pp. 1-2; Tr. 4, p. 55; Tr. 5, pp. 184-185)
114. T-Mobile estimates that ClearLinx DAS would provide approximately 40% of the coverage footprint and approximately 60% of the roads in the Round Hill area when compared to the coverage provided by the proposed Round Hill Road site. (T-Mobile 6, pp. 4-5)
115. New Cingular would not locate on the ClearLinx DAS if it were constructed. New Cingular seeks to provide coverage to both the Merritt Parkway and surrounding residential areas. (New Cingular 2, Q. 18; New Cingular 9, Q. 2)
116. Sprint Nextel would not locate on the ClearLinx DAS if it were constructed. Sprint Nextel seeks to provide coverage to both the Merritt Parkway and surrounding residential areas. (Sprint 9, Q. 1; Tr. 5, pp. 137-138)

Combined and Dual Band Antennas

117. A combined antenna system, a system that consolidates all of the carriers' transmit and receive needs onto one antenna, is not a viable alternative since no known manufacturer markets such a product. (Cellco 19, p. 3; Cingular 2, Q. 17; Tr. 4, pp. 109-110)
118. Dual band antennas allow for the use of cellular and PCS frequencies on the same antenna. (Cellco 19, p. 2)
119. Cellco would not use dual-band antennas in the Round Hill area since dual band technology would reduce coverage by 1.5 db. Installing dual-band antennas at 110 feet at the proposed site would reduce Cellco's coverage footprint from 4.3 square miles to 3.4 square miles and would include a 0.1-mile gap in PCS coverage on the Merritt Parkway. (Cellco 4, Q. 8; Tr. 3, p. 60; Tr. 4, p. 31)
120. Sprint Nextel operates an iDEN and PCS network. Each network would require separate antennas since a dual band antenna suitable for operation of both networks has not been developed. (Tr. 4, pp. 141-142)
121. New Cingular proposes to use dual-band antennas at the site. (New Cingular 1, Q. 9)

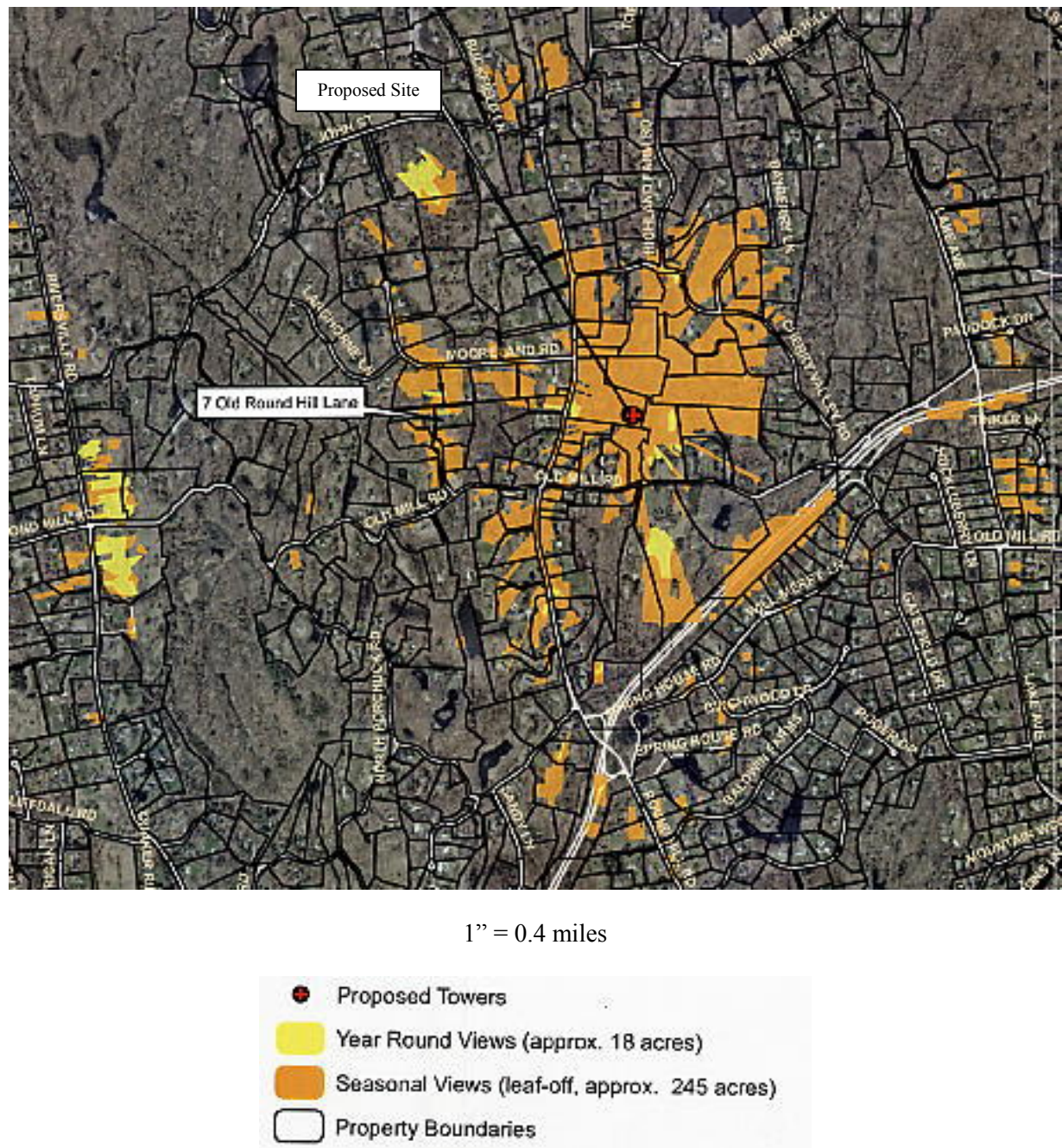


Figure 1. Mr. Berger's projected visibility of proposed tower. (Berger 3, Visibility Analysis)

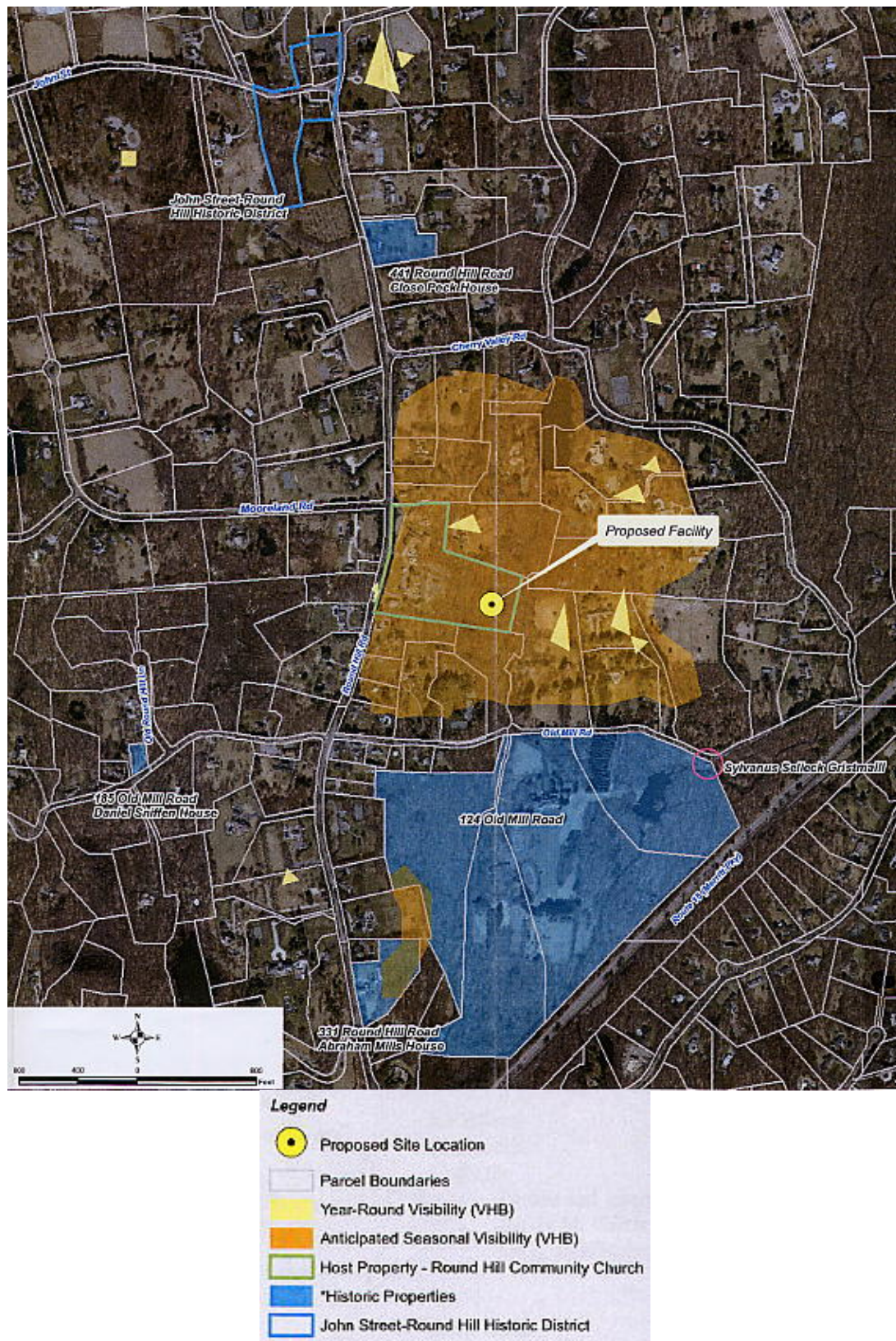


Figure 2. Cellco's projected visibility analysis from area within 0.7 miles of site. (Cellco 21)

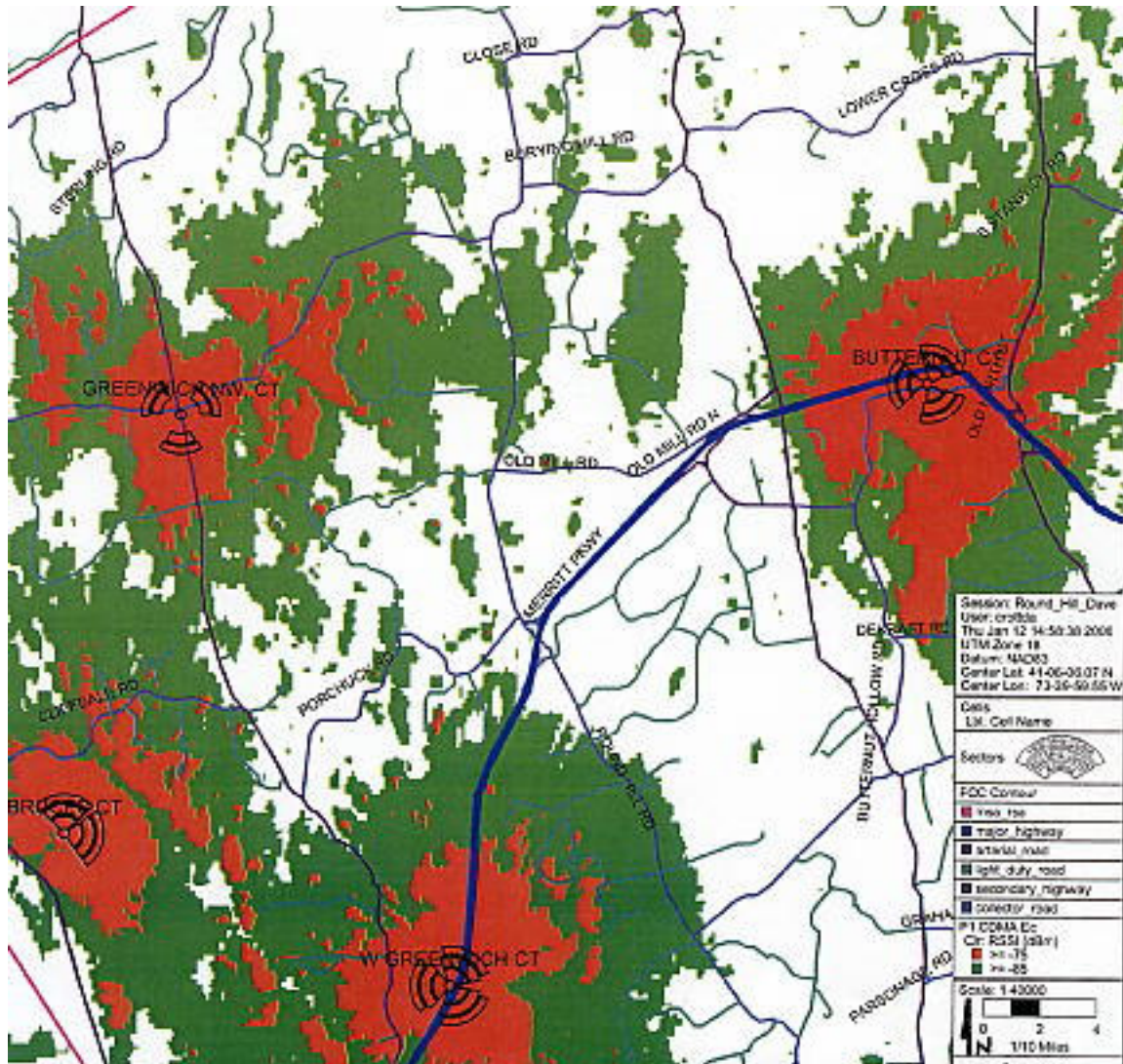


Figure 3. Cellco's existing PCS coverage in the Round Hill area with a signal level threshold of -85 dBm. (Cellco 4, Tab 1)

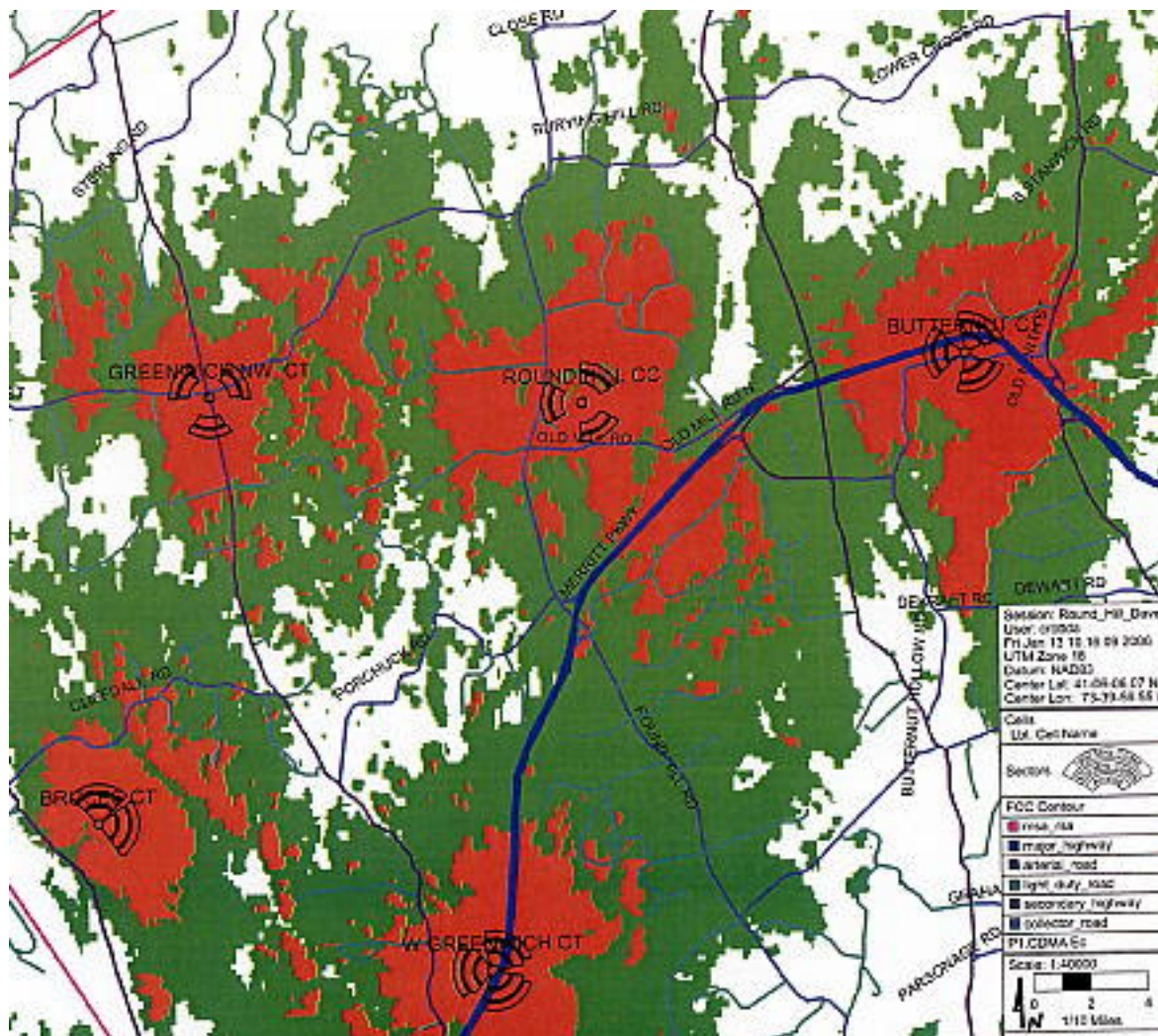


Figure 4. Cellco's existing and proposed PCS coverage in the Round Hill area at an antenna height of 110 feet agl with a signal level threshold of -85 dBm. (Cellco 4, Tab 1)

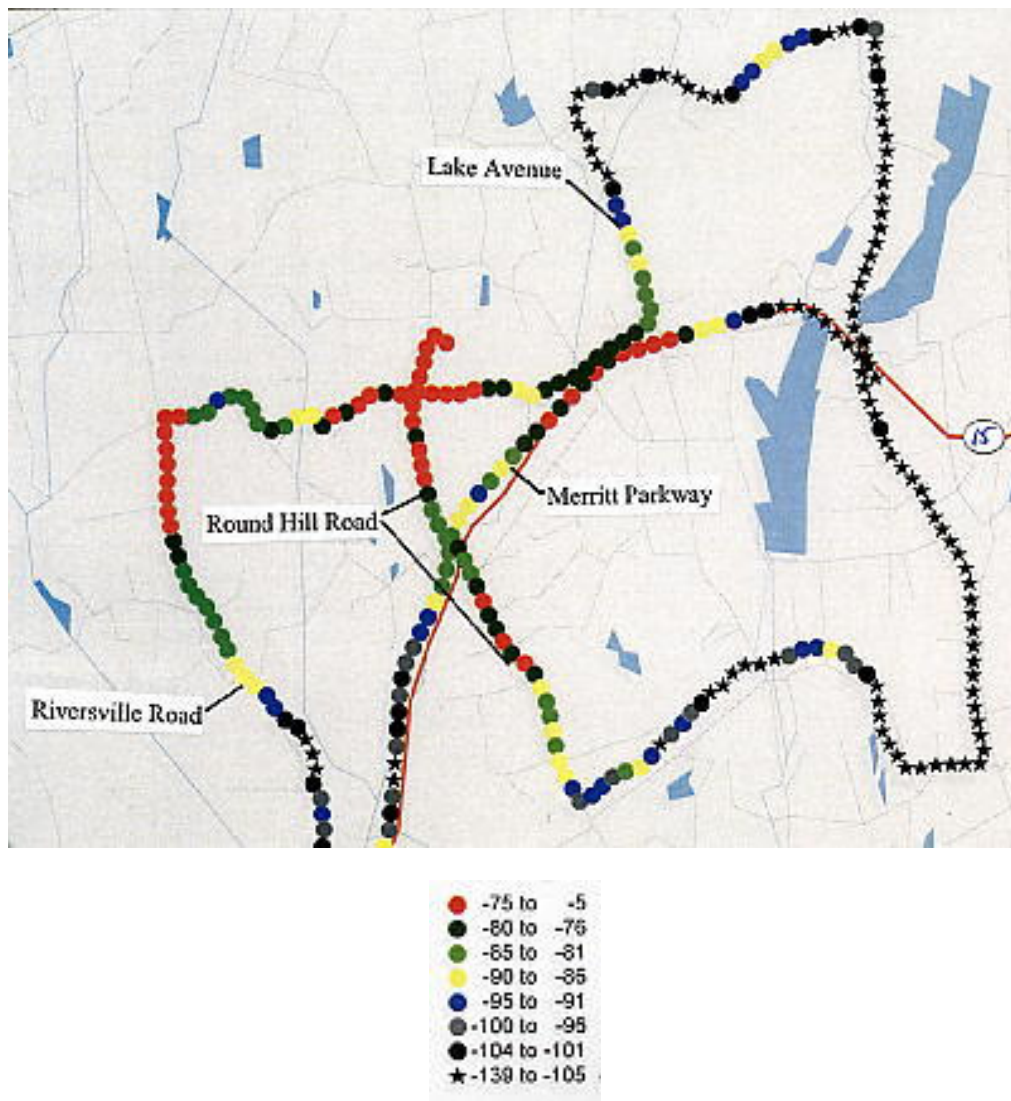


Figure 5. Drive test depicting PCS coverage from site with antennas at 100 feet agl. Drive test depicts a coverage gap on the Merritt Parkway east of Round Hill Road (blue and yellow bins). (Cellco 10, Tab 2)

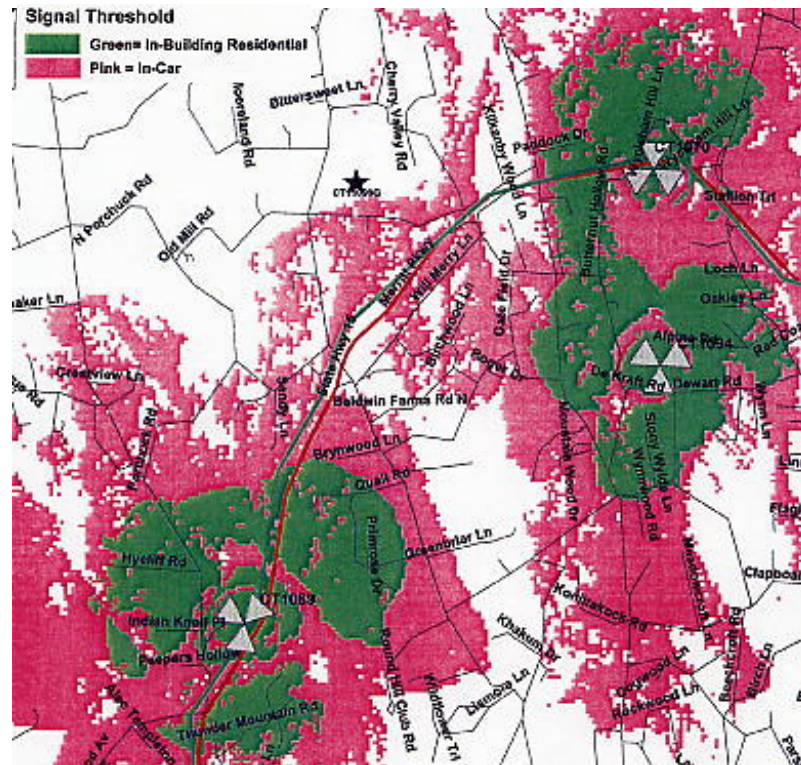


Figure 6. T-Mobile's existing coverage in the Round Hill area. (T-Mobile 1, Tab 3)

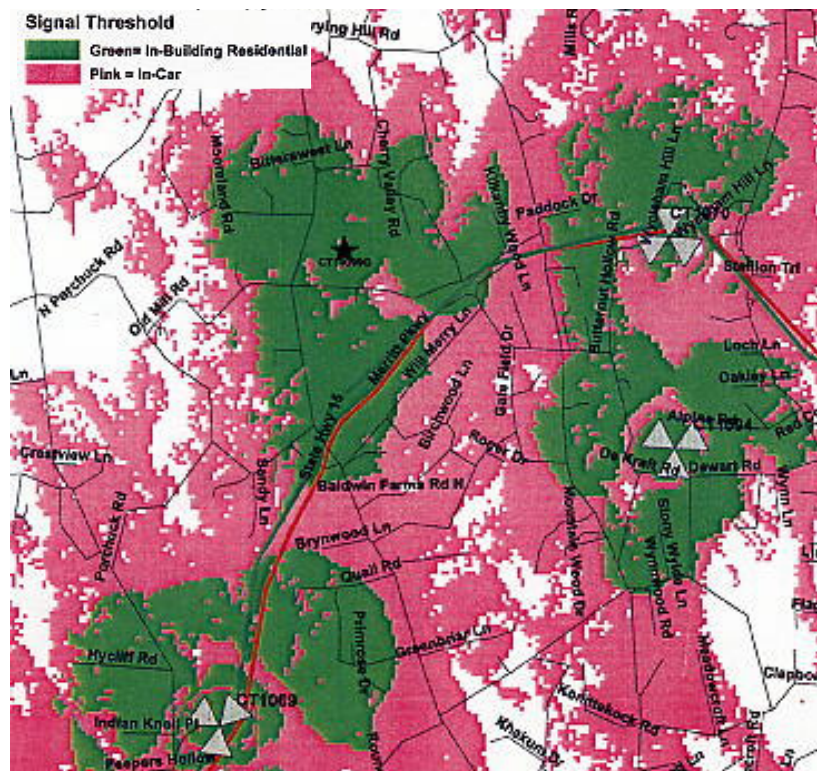


Figure 7. T-Mobile's existing and proposed coverage with antennas at 110 feet agl. (T-Mobile 1, Tab 3)

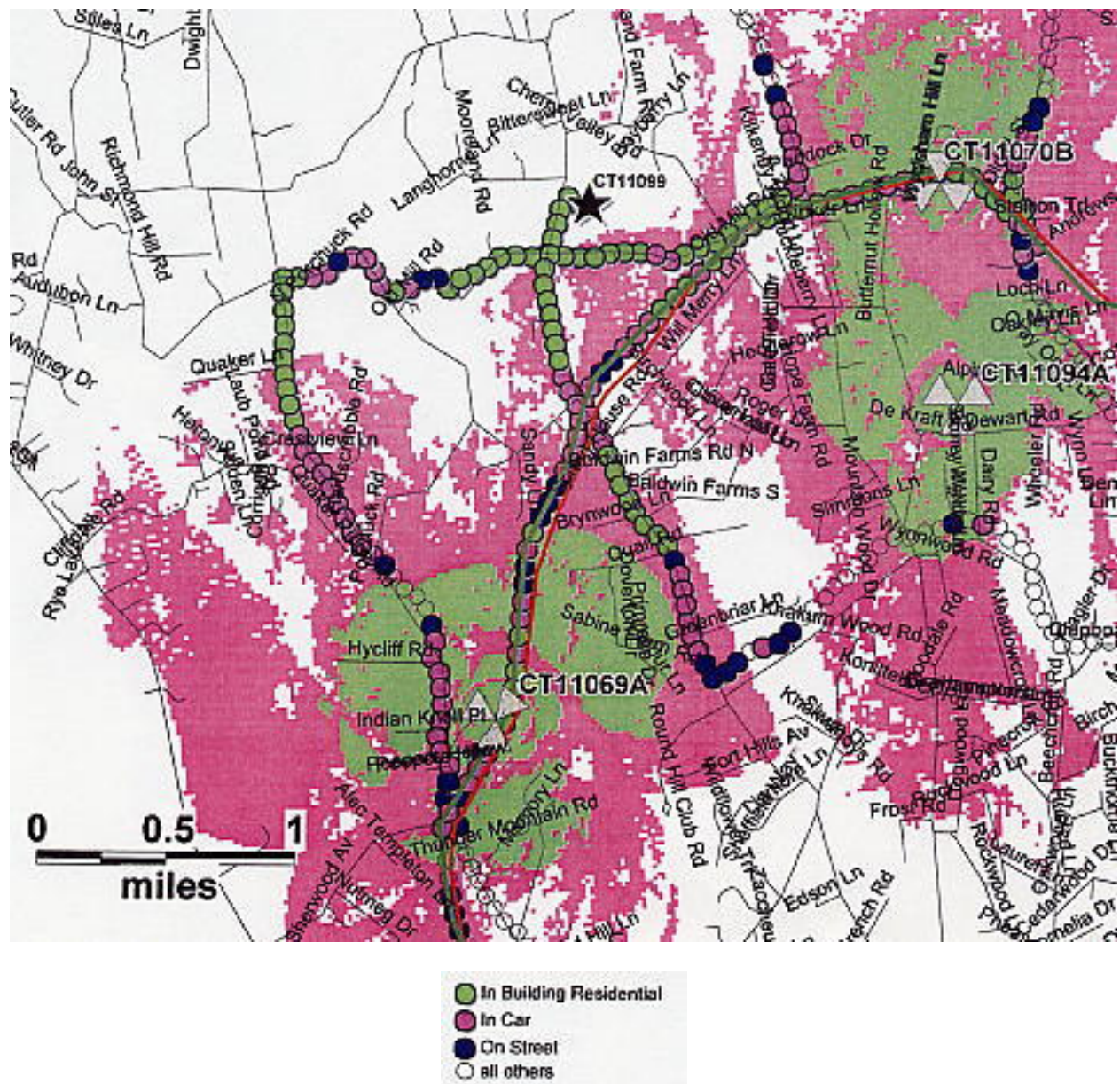


Figure 8. Drive test depicting T-Mobile PCS coverage from site with antennas at 100 feet agl. Drive test depicts a coverage gap on the Merritt Parkway east of Round Hill Road (dark blue bins). (T-Mobile 4)

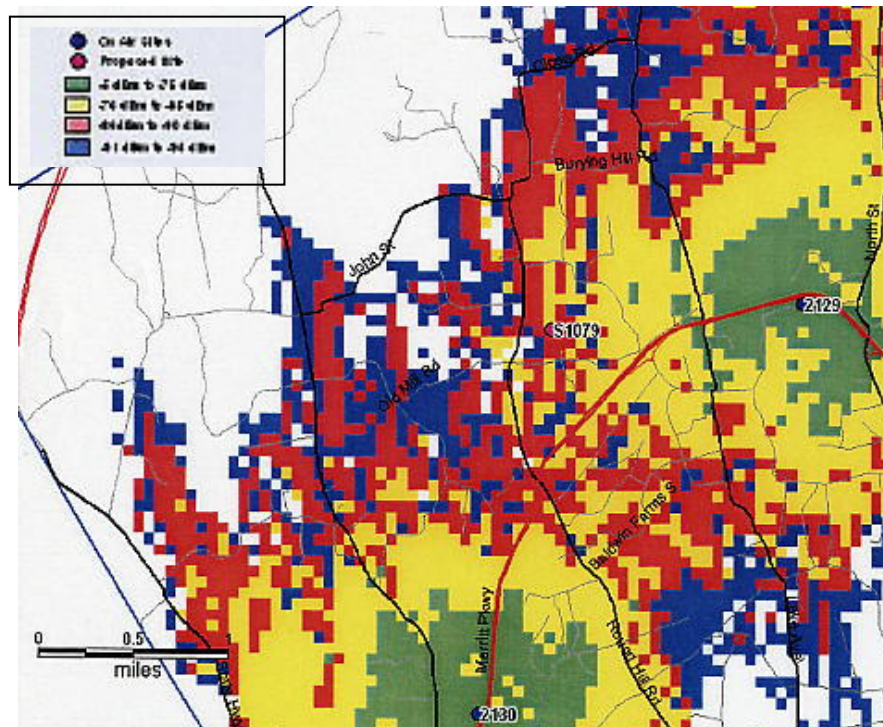


Figure 9. New Cingular's existing PCS coverage in the Round Hill area. (New Cingular 4)

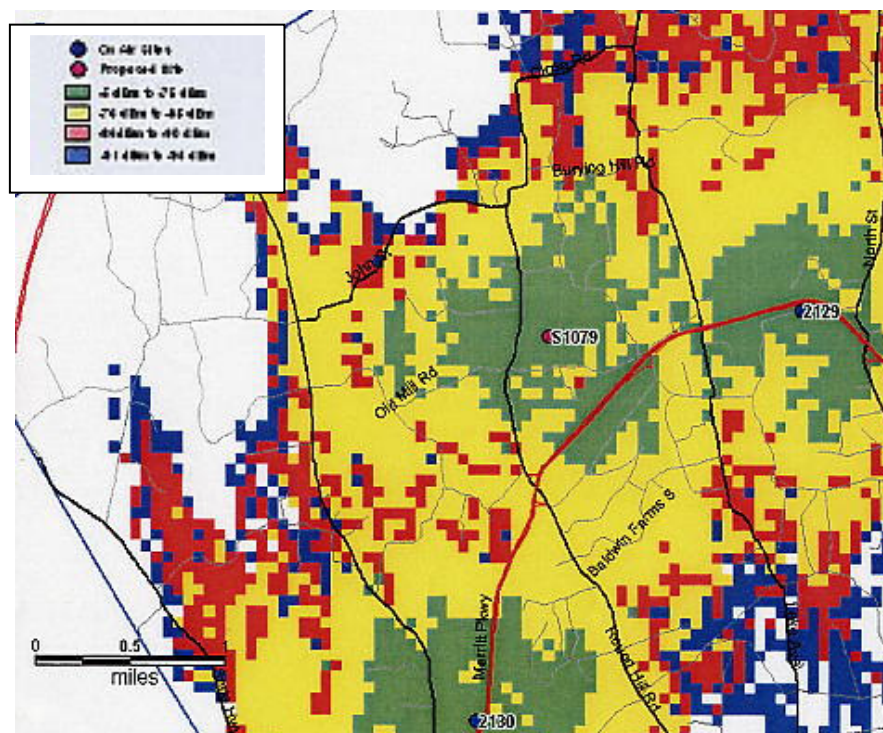


Figure 10. New Cingular's existing and proposed PCS coverage in the Round Hill area with antennas at 90 feet agl. (New Cingular 4)

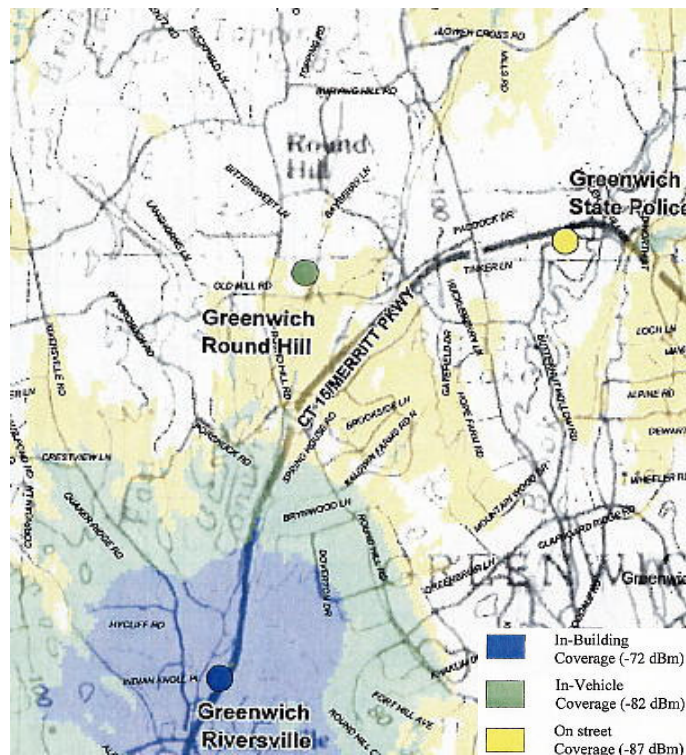


Figure 11. Sprint Nextel existing Sprint iDEN coverage in the Round Hill area. (Sprint Nextel 1, Q. 5)

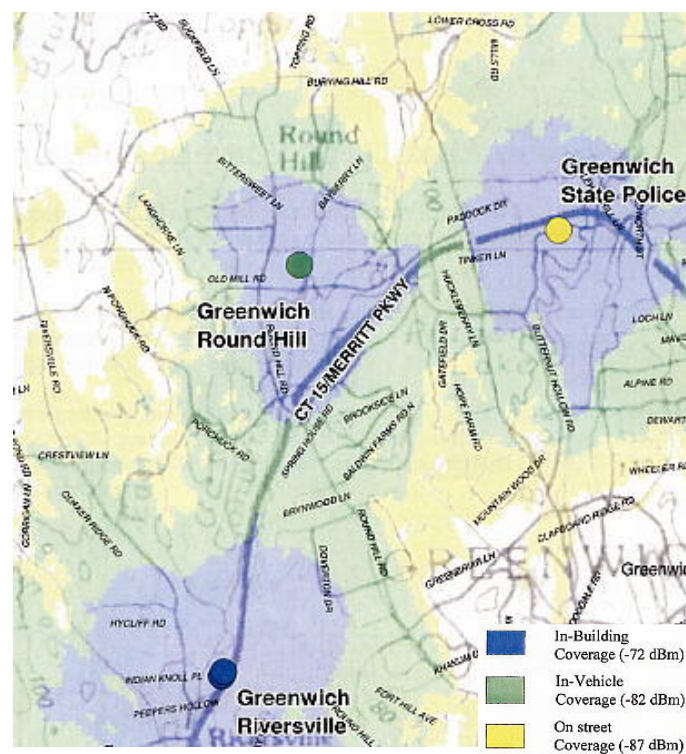


Figure 12. Sprint Nextel existing and proposed Sprint iDEN coverage in the Round Hill area with antennas at 100 feet agl. (Sprint Nextel 2)

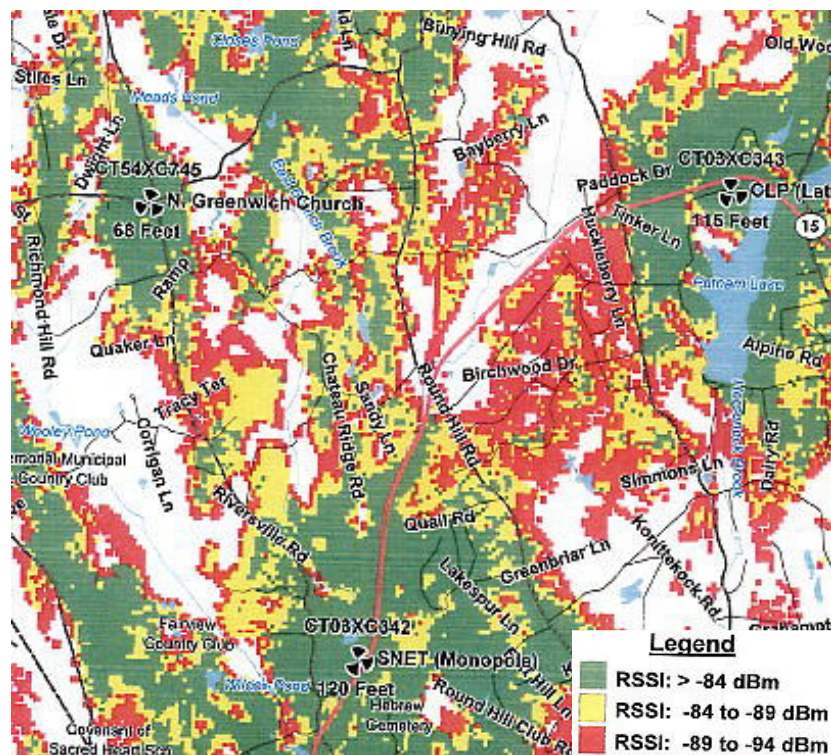


Figure 13. Sprint Nextel's existing Sprint PCS coverage in the Round Hill area. (Sprint Nextel 1, Q. 5)

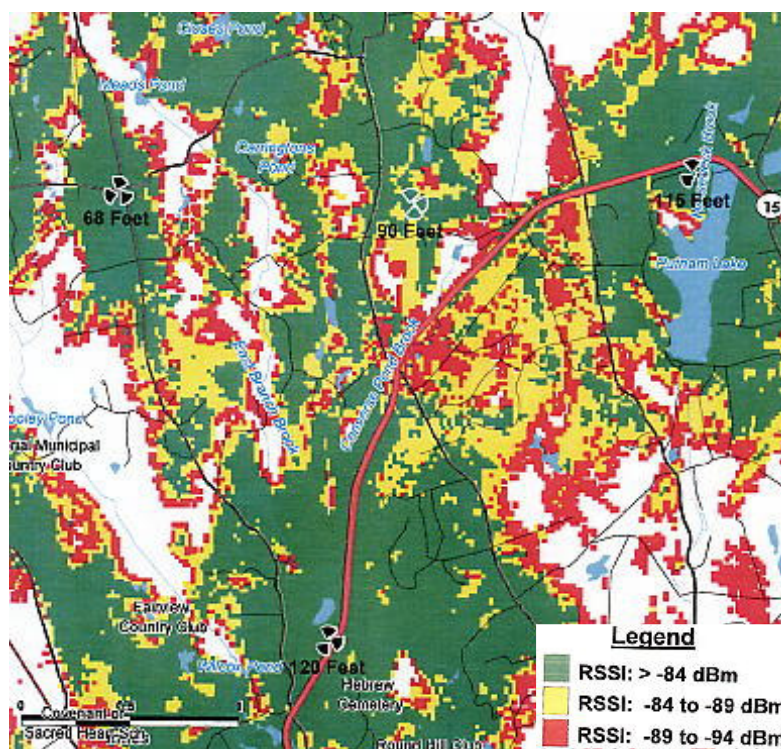


Figure 14. Sprint Nextel's existing and proposed Sprint PCS coverage in the Round Hill area with antennas at 90 feet agl. (Sprint Nextel 3, Q. 6)